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ELECTRICITY OF STEAM.

Much curiosity has of late been excited by the announcement of the development of electricity from a steam boiler at a colliery near New Castle in England. Several gentlemen have made numerous experiments upon these boilers and more recently similar phenomena have been noticed in other instances, whenever the suitable precautions have been taken. Instead of encumbering our pages with the mere copy of these experiments, many of them being identical—we purpose giving an outline of all that has been observed.

In the month of October, one of the workmen employed at the above mentioned establishment, perceived a sensation similar to a prick when touching some part of the safety valve. Supposing that he had struck the iron without being aware of it, no particular notice was taken of the fact, until on its repetition it was ascertained that a spark had passed between the finger and the iron. Upon trial, it was found that to produce the spark, it was necessary that some part of the body should be exposed to a jet of steam issuing with considerable force, from a small leak near the safety valve. These circumstances being communicated to several scientific gentlemen, experiments were made, which resulted in the determination of the following facts.

On touching various parts of the boiler with a metal, no spark was visible until the hand or some portion of the person was exposed to the jet of steam, and the larger the exposed surface, the brighter was the spark. When some good conductor, such as a shovel or a collector armed with pointed wires was introduced into the steam, the sparks were quite long and brilliant, sufficient to charge a ley-

denjar quite rapidly and to inflame combustibles placed on cotton, etc. In all these experiments it was found that the electricity was *positive*. The pressure of the steam seemed to have a direct effect upon the quantity of electricity, causing it to increase or diminish as the closing or opening of the safety valve produced a change in the pressure. At the time of the experiments the working pressure was 35 lbs. to the inch. It was soon found that these phenomena, depended upon no peculiarity in the structure or condition of the boiler, all that was necessary to their repetition being a jet of high steam unmixed with water or condensed vapor. Locomotive as well as stationary engines have been tried with complete success. The same experiments have been repeated at the United States Mint in Philadelphia, and with the same results.

The cause of the development of this immense quantity of electricity, appears to be generally ascribed to the condensation of steam. One thing is certain, that true gaseous steam when issuing with great velocity, is so poor a conductor as to allow of the return of little or none of the electricity developed, while the steam from a gauge cock by its mixture with the spray of water—and that from a jet of low pressure by its immediate return to vernacular vapor, prove such good conductors as to destroy all evidence of electric excitement.

It might be supposed that the oxidatic of the conductor by the jet of steam might be the source of much if not all of the electricity, but this is disproved by the experiments at the United States Mint where a large bar of 400 ounces of fine gold on being used as a conductor gave the same results as other metals. The human body when employed as a conductor likewise disproves this supposition, as no chemical effects can then take place, the smaller quantity of electricity developed depending upon the inferior conducting power of the human body as compared with metals.

A far more reasonable hypothesis is, that the electricity arises from the friction between the jet of steam and the atmosphere or orifice of the boiler; this however, is refuted by an experiment in which the steam is condensed in a coil of tube kept cool by the usual arrangement, the manifestation of electricity are said to have been as abundant as ever. On our own minds the evidence and experiments adduced to prove that friction is not the agent, have not produced entire conviction, on the contrary some of them seem rather to favor this notion than otherwise.

That the formation or condensation of steam should produce electric excitement is not surprising as experiments have been made

long since, which go to show that every change of condition from liquid to gaseous and *vice versa* is attended by electrical phenomena. These experiments were made on a very small scale, and have not received the approbation of men of science in general. But the careful investigation of these phenomena on so large a scale as is offered by the steam engine induces us to hope that the question may soon be settled. When this subject was discussed at a meeting of the American Philosophical Society, several cases were mentioned in which sparks of considerable size were drawn from a stove accidentally insulated and in which anthracite was burning. These cases were brought to afford an analogy to those in which electricity was developed during the formation or condensation of steam.

The question has been asked by many, whether all this has any thing to do with the explosion of steam boilers, we answer decidedly, nothing whatever, for it needs but little knowledge of the principles of electricity or chemistry, to inform us that even supposing the existence of an explosive compound inside of the boiler, no explosion could take place from the highest charge that could be communicated to an insulated boiler, while in fact boilers are scarcely if ever insulated, and then the electricity of steam can cause a spark to take place under the most favorable circumstances only on the outside of the boiler. It is very probable however, that many of the appearances of flame at the moment of explosion have been caused by the spontaneous discharge of a cloud of vapor rendered highly electrical by the immense quantity of very high steam suddenly and simultaneously condensed; the phenomena therefore in this supposition is the effect and not the cause of the explosion.

It has been the fashion in modern times to ascribe nearly all the phenomena of nature, to the agency of electricity, the misconception of the vulgar, and the prejudice of philosophers have alike tended to this end—consequently no new experiment or discovery, in which electricity has the least to do, is ever suffered to escape universal attention, but is generally taxed in some way or other to account for half the phenomena of the universe, sometimes for all of them. The popular nature of these experiments upon the electricity of steam have led and probably will lead to many wise and learned (?) disquisitions by those who know little or nothing about the matter.

RAILROADS FROM NEW YORK CITY TO LAKE ERIE.

In this number is presented to the readers of the Journal, a profile of the great railroad route, leading from New York city to lake Erie by the way of Albany.

This route is arranged into eight divisions, for each of which there is a separate act of incorporation as follows:—

	Distance in miles.	Miles completed.	Miles under contract
1 New York and Albany,	147	11	110
2 Mohawk and Hudson,	16	16	
3 Utica and Schenectada,	78	78	
4 Utica and Syracuse,	54	54	
5 Auburn and Syracuse,	26	26	
6 Auburn and Rochester.	78	35	43
7 Tonawanda,	32	32	
8 Batavia and Buffalo,	30		
Total,	461	252	153
			252

Complete and under contract 405 miles, not under contract 56 miles.

The line from New York to Albany passes over ground elevated from 300 to 400 feet above tide, the most elevated point being 769 feet above tide. This point is situated near the S. W. corner of Massachusetts, the general course of the line being such as to pass near the West line of that State and of Connecticut, at a distance of 20 to 25 miles from the Hudson River.

From Albany to lake Erie, the route follows nearly the course of the Erie canal, departing from it on the South between Syracuse and Rochester and between Rochester and Buffalo. The ground on this portion is elevated from 400 to 600 feet above tide, the highest point being situated between the Genesee river and lake Erie, and elevated 912 feet above tide.

The grades on this route from New York city to lake Erie, seldom rise as high as 30 feet per mile, there being but four points where this limit is exceeded and the distance in each case being short. These points are situated, two of them, between the Hudson and Mohawk rivers—the third on the Auburn and Rochester road, and the fourth on the Tonawanda.

The Mohawk and Hudson road, which was the first constructed, is graded for a double track, and has a double track superstructure supported for most of the distance upon stone blocks. This road has two inclined planes operated by stationary steam power, which it is purposed to avoid, by steep grades, such as may be surmounted by locomotive engines.

The railroad now building between West Troy and Schenectada and which is intended also to form an important link in the chain of railroads to Buffalo, has a maximum grade of 60 feet

per mile. This may be connected with the New York and Albany road by the continuation of the latter to Troy, and will increase the distance to Buffalo about 6 miles, making 465 in all from New York city.

The Utica and Schenectada railroad is graded for a double track, and has a double track superstructure for one-fourth of the distance.

The Utica and Syracuse road is graded for a single track one half of its length and has a single track superstructure. The remaining half is a single track supported upon piles. The expense of this road would seem to show that on ordinary ground but little if any thing is saved in the first cost by the piling system, while the *ultimate* expense is probably increased.

The Auburn and Syracuse railroad is graded for a double track in the most permanent manner. The amount of perishable material in the road-bed not exceeding in value $4000. It passes probably over the most difficult ground between Albany and Buffalo, and has a single track superstructure.

The Auburn and Rochester road so far as completed is graded for a single track, with a single track superstructure. The course which it pursues is not very direct, in consequence of which the distance from Syracuse to Rochester is full 13 miles further than it would have been if the route near the Erie canal had been taken.

The Tonawanda road is graded for a single track and has a single track superstructure. This road has been in operation about 6 years.

All the roads above mentioned have a timber superstructure, the timber rail being surmounted by an iron bar or plate 2½ by ⅝ to ¾ inches. This is in fact the plan adopted upon all the railroads in the State, with the exception of the Long Island railroad and the New York and Erie road. The work upon the unfinished portions of the Auburn and Rochester road is in progress, and arrangements are making for the construction of the portion between Batavia and Buffalo. This road is represented in the profile as passing through Attica. It seems to be the determination now to carry it on the direct route, which lessens the distance 9 or 10 miles, making the total distance from Buffalo to New York city, as above 461 miles; or to tide water and steam navigation on the Hudson at Albany only 314 miles. This is by far the shortest and most favorable route for connecting lake Erie with the tide waters of the Atlantic.

Several of the railway companies between Albany and Buffalo are subject to restrictions in the transportation of freight and pas-

sengers. The Utica and Schenectada company, are not permitted to carry freight on any terms, and can charge only four cents per mile for passengers. The Syracuse and Utica, Auburn and Syracuse and Auburn and Rochester companies, are permitted to carry freight by paying to the State the same tolls that the State would have received, had the freight passed upon the canal. These companies are not allowed to charge over five cents per mile for each passenger.

The restrictions as it regards the conveyance of freight, evinces an illiberal and short-sighted policy on the part of the State, and the more so, as the State is squandering millions in the enlargement of the Erie canal.

One-third of the money which it will cost the State to make this enlargement would build an entire new double track, solid iron railroad from Buffalo to Albany—which, if located on ground as favorable as that occupied by the canal, making the line level or descending from Buffalo to Albany, would have double the capacity of the canal when enlarged, convey freight at less cost to the public in one-fifth of the time, and afford a greater revenue to the State. The construction of a railway from Albany to Buffalo, to be operated by locomotive steam power, was urged instead of the canal, in the first instance, by Col. John Stevens of Hoboken, N. Jersey, in 1812. The arguments which he adduced were never refuted—and notwithstanding iron railroads had then never been used for the general purposes of trade and travel, and had never been operated by locomotive steam power, it is surprising how very near the engine proposed by Col. Stevens approximated in the dimension of its several parts and degree of steam pressure to those now in successful operation on most of our railroads.

The road from New York to Albany has been commenced, and a large portion of it has been put under contract for grading, extending through West Chester, Putnam and Dutchess counties. Its progress for several years past has been retarded—first, by an unfavorable report of an Engineer,* who represented that a route could not be obtained within the limits of the State without resort to a tunnel or inclined planes, operated by stationary steam or horse power—secondly, by the derangement which has for some time prevailed in the monetary affairs of the country, and thirdly, by the opposition from rival interests, particularly from the New York and Harlem railroad company. This latter opposition has, within the last year presented itself in a new form; by an unexpected claim on the part of that company to the exclusive right to Westchester county. The N. Y. and Harlem railroad company is in possession of a

* Judge Wright.

road upon New York Island 7½ miles long, which is greatly in debt and does not pay interest and expenses, having cost over 1,200,000 dollars.

That company is so deeply involved, that if they had the exclusive right, which they pretend to have to Westchester county, they could not, in all probability, construct a road through it. Their opposition must, therefore, be attributed to a desire to raise their credit and extricate themselves from present difficulties by coercing an arrangement with the N. Y. and Albany company, on terms as favorable to themselves as possible.

Notwithstanding these embarrassments, the New York and Albany railroad, has continued to advance and will be pressed steadily forward to a completion, and there is now little doubt, that ere two or three years at most have elapsed, there will be a continuous line of railroad in operation from New York city to lake Erie by the way of Albany, on a route much superior, in a topographical and commercial view, to any other which can be adopted. This route will also be connected, in the same time, with steam navigation on lakes Ontario and Champlain by a branch of 35 miles to the former and 40 miles in length to the latter, and also with the railways of New England.

ESTIMATE OF COST PER ANNUM, OR SEASON, OF RUNNING A FIRST *class steamboat, between Albany and New York—average passage both ways eleven hours.*

Cost of boat $70,000, at 7 pr. ct. per annum,		$4,900
Wear and tear of ditto, at 12 per cent per annum.		8,400
Fuel, 40 cords per trip, for 240 trips in 8 months, at the average price of wood in Albany $6 and N. York $5,		52,800
Insurance or $70,000 at 3 per cent,		2,100
Wharfage, agencies packing, tiller ropes, printing bill, etc.		3,000
Wages, to wit:		
First Captain, for the year,	$1,500	
Second ditto,	1,000	
2 Pilots, to relieve,	1500	
2 Engineers, do,	1500	
6 Firemen—8 months, at $20 each,	960	
10 Deck hands, do	1600	
Steward of supplies,	800	
12 Waiters at $15 each, 8 months,	1440	
		10,300
Total expenses for one season, or $330 per trip		$81,500

The above estimate has been reviewed by practical men connected with the steamboats on the North river, who gave the principal items, and particulars of wages. Should the estimate of wood, be considered too high, let 20 per cent be deducted—still each trip would cost $295

Every expense of motive power, according to de Gerstner and others, will be covered by one dollar per mile, per trip, for an engine and train, to carry 800 passengers from the city of New York to Albany, at the rate of 25 cents per hour—to include stoppages—equal to $147

It will thus be perceived, that five hours less in time, and fifty per cent less in the cost of transportating a passenger, may be accomplished, on the completion of a *good edge* railway, compared with the steamboats on the river. J. E. B.

Great Performance of a Locomotive Engine.—On Friday last, the 5th inst., the locomotive engine 'Hechens and Harrison,' built by Messrs. Baldwin, Vail & Hufty, hauled to Phiadelphia, over the Philadelphia and Reading Railroad, ONE HUNDRED AND TWO BURDEN CARS, loaded with the following articles of freight:—1479 bbls. of flour, 49 tons of iron, 1163 bushels of grain, 12 tons of wiskey, oil and ship stuff, and sundry other freight, amounting in all to 251½ tons of 2240 lbs. weight of cars 168 tons, making total weight of 419½ tons of 2240 lbs. by the engine. The average running time of the train was 10¾ miles per hour. Weight of engine with water and fuel, 12 tons; weight on driving wheels, with water, fuel and two men, 6¼ tons.

As the above was the regular freight train, transporting the ordinary business of the road, and no experimental trip, no account was kept of the quantity of fuel or water used by the engine. Length of train 1201 feet; longest continuous level over which the above train was hauled, at a speed of 10½ miles per hour, 9 1-10 miles.—*U. S. Gazette.*

Hartford and Springfield Railroad.—We learn that five different routes have been surveyed between Hartford and Springfield, and that the Engineer will make his report to the General Committee having charge of the undertaking, at their meeting in Hartford to-day. In the mean, time we are informed by a Hartford gentleman, that 20 of the 24 miles can be run in a continous straight line, with no grade exceeding 25 feet to a mile. No Railroad in New England, it is believed, can show such a line. When this short section of 24 miles is made, there will be a Railroad the whole distance from New Haven to Boston, and also (on the completion of the Western Railroad) from New Haven to Albany.

Long Island Railroad.—Thirty miles of this road are completed and in active operation. Twenty miles further are graded in part; the remaining distance is forty-five miles, making in all ninety-five miles. The Company has expended of its own funds upwards of four hundred thousand dollars. This sum has not yet been realized; but the Company is about to receive and apply it, and is it comtemplated that by the 1st of September next, the whole amount of the loan will have been expended, and that at that time or soon thereafter, twenty additional miles will be completed and in operation.

SECOND REPORT OF THE DIRECTORS OF THE NEW YORK AND ERIE RAILROAD COMPANY, TO THE STOCKHOLDERS.—*February 3d*, 1841.

At a meeting of the Board of Directors of the New York & Erie Railroad Company, at their Office, No. 34 Wall street, on the 3d day of February, 1841, the following Report having been read by the President, was adopted, and ordered to be printed and distributed to the Stockholders.

THE Directors had it in view to submit the present Report to the Stockholders on the occasion of opening the Eastern Division of their road; but that event having been hindered by delay in the arrival of a part of the requisite iron, and the effects of an extraordinary storm having occasioned a further postponement, they trust that a notice of their proceedings, of the progress of their undertaking, and of various matters relating thereto, will be acceptable at the present time.

It being about five years since the date of the first Report, a reference to the principal events of that period will be expected.

The consideration that the Southern tier of counties had just grounds of reliance, recognized and sanctioned by the Legislature during the construction of the Erie canal, for timely and liberal aid from the State towards opening for them a thoroughfare from the city of New York to lake Erie, entered largely into the view of those who originally proposed the construction of this road. The project of a State road, brought forward under the auspices of Governor Clinton, and surveyed in 1825, had failed for want of harmony in relation to its details; soon after which, the subject of Railways began to attract the attention and confidence of the public. In 1832 the charter of this company was granted. In 1834 the route of the road was surveyed, under the authority and at the expense of the State; and in 1836 the Legislature granted to the Company, in aid of its construction, a loan of the credit of the State for three millions of dollars.

The law pledging this aid provided for the issue of the loan in large instalments, on the completion of specified Divisions of the road. The Division on which, under that act, the work was commenced in 1835, extended from the Hudson & Delaware canal to the Chenango river, and required on the part of the Company an expenditure of about two millions of dollars, before any portion of the loan could be received.

The commercial and financial embarrassments which commenced

about the close of 1836, occasioned a suspension of the work until 1838, when the Legislature so modified the law as to authorize the issue of $100,000 of State stock for every like sum which had been or should thereafter be collected on the stock of the Company, and expended on their undertaking; provided, that prior to any such issues, ten miles of the road at the Eastern and ten miles at the Western termination should be located and put under contract.

The then Board of Directors accepted this law, and in August, 1838, entered into contracts for the grading, bridging and masonry of the prescribed portions of the road.

Of collections on the stock of the Company expended on the road, the amount up to the close of 1838, was $346,237.50, which entitled the Company to receive only $300,000 of State stock until the further sum of $53,762.50 should be collected and expended.

It however appeared that the contracts on the two portions of ten miles each, including the pier in the Hudson, land and damages, engineering, and contingencies, would amount to not less than $350,000. A loss of $55,000 was incurred on the sale of the $300,000 of 4½ per cent. State stock first received; so that for discharging these contracts there was a deficiency of means to the extent of about $100,000.

Owing to the continued pressure of commercial embarrassments, it was deemed inexpedient to call on the Stockholders in the city for further payments, until a more favorable state of things should occur.

A disposition was nevertheless manifested by the inhabitants of several of the interior counties, to subscribe to the stock of the Company, and to pay instalments thereon, on condition that portions of the road in such counties should be put under contract; which disposition was encouraged by resolutions of the Board of Directors, and by a circular issued with their sanction.

Subscriptions in several of the counties were accordingly made, and pursuant to the stipulations of the Company, an instalment having been paid on the shares subscribed in Rockland and Orange counties contracts were entered into in July, 1839, for the grading and masonry of thirty-five miles of the road, extending from the ten miles previously contracted for in Rockland, county to the village of Goshen, and for a short distance near Middletown.

The collections on these subscriptions, added to balances received of instalments previously called on other stock, extended the amount of receipts on the stock of the Company, and of expenditures thereof before the close of the year, to something over $400,000; and therefore entitled the Company to the fourth instalment of $100,000 of State stock, which was accordingly issued in December, 1839.

Pursuant to the same views and understandings, contracts were entered into in February, 1840, for the construction, chiefly with piles, of one hundred and seventeen miles of the road between Binghamton and Hornellsville, denominated the Susquehanna Division.

In April, 1840, the Legislature further so modified the previous laws, as to authorize the issue to the Company of $100,000 of State stock for each $100,000 previously collected on the stock of the Company; and the like sum of $100,000 for every sum of $50,000 which should thereafter be collected on their stock, and expended in the construction of the road, till the issues amounted to $3,000,000.

Under this act four instalments of $100,000 each, of State stock, bearing interest at the rate of 5½ per cent., were received and expended in the course of 1840: the construction of the road on the Eastern and Susquehanna Divisions, was diligently prosecuted: the graduation, including masonry and bridging, of ten miles at the Western termination, was finished: that of forty-seven miles in the counties of Rockland and Orange, so nearly perfected as to receive the superstructure, which was provided and most of it laid: the pier in the Hudson, at Piermont, was enlarged: part of the buildings required at that station and at Goshen, were erected: 5000 tons of heavy edge rails, with the necessary chairs and spikes, were purchased: three locomotive engines, weighing fifteen tons each, and four large eight wheeled passenger and a number of freight cars were also purchased, with other requisites for putting the road in operation from Piermont to Goshen: thirty miles of the road on the Susquehanna Division were prepared for the superstructure, besides one of the larger class of bridges: and the entire line of the road west of Goshen, excepting forty miles on the Delaware and ten miles near Dunkirk, which had previously been located, was re-surveyed, and most of it prepared for final location.

Since the passage of the law of April last, collections on the stock of the Company, up to the present date, have been received and

duly expended, to the amount of about $220,000; entitling the Company to $400,000 of the State loan, of which sum $200,000 have been received since the 1st of January, 1841.

During these proceedings, the attention of numerous individuals of this and neighboring States, has been drawn to the subject of the road, its route and relations, the plan of construction, and the affairs and prospects of the Company; and a growing confidence on the part of those interested, and of others, who have taken the trouble to inquire, has been abundantly manifested.

In the course of the year, it appeared probable, that the work not already let, might be put under contract on satisfactory terms, and to parties who, after due examination, would be disposed to subscribe to the stock of the Company. Proposals were accordingly received, and contracts have been concluded for grading the roadway from Middletown, near Goshen, to the mouth of Calicoon creek, on the Delaware river, a distance of sixty-five miles; for completing the unfinished sections on the forty miles between the latter point and Deposit, of which, about thirty miles were graded, under the contracts of 1835; and for constructing about one hundred and twenty-four miles, extending west from Hornellsville to the ten miles previously completed near Dunkirk.

The parties with whom these extensive and important contracts have been made, are of the ablest, most experienced, and most intelligent contractors in the country. They have examined the route, claims and prospects of the road, and have shown their confidence in the undertaking, and their satisfaction with the plans and views upon which it is conducted, by subscribing for stock of the company equal, in some instances, to one-third, and in others, to three-eighths of the amount of their contracts, on which they propose to pay instalments as their work proceeds; and they are believed to be well able to hold their stock, make the necessary advances, and complete the payments on it, by the time their work shall be accomplished.

In these, and all other instances of subscriptions by parties with whom contracts for labor or materials have been made, the stock is regarded and taken as fully equivalent to cash. In no instance, has any higher price been paid to those who have subscribed for stock, than would have been paid, had no such subscription taken place. On the contrary, it has in numerous instances happened, that higher prices have been paid to persons who refused to

subscribe for stock, than have been paid to stockholders, for like materials and work. This results from the most obvious considerations, and involves nothing incredible or surprising. Those who have examined the route and plan of the road, the character and resources of the country through which it passes; its very moderate cost, and its relations to the rivers, canals, railways and routes, which intersect it, and to the commercial capital of the country on the Atlantic, and to the lakes, and regions of the west; have perfect confidence in the safety, productiveness, and value of the stock, and regarding their subscriptions as the best investment they can make, are disposed to limit them only by their ability to hold the stock till the road is completed. Those, likewise, who reside near the road, who desire, and are interested it its progress, and are friendly to, and have confidence in the measures adopted by the Company, are disposed to aid in its construction, not only by subscribing to the stock, but by furnishing materials and labor at the most moderate prices; whereas, those who, from ignorance, selfishness, or other causes, are unfriendly or indifferent, will neither subscribe for stock, nor furnish materials or labor without the highest prices attainable under the circumstances which occasionally render it necessary to obtain supplies from them.

Passing from this rapid sketch of their operations, the Directors proceed to state more particularly:

I. — THE PROGRESS AND STATE OF THE WORK.

The following portions of the roadway are graded and otherwise prepared for the superstructure: viz.

	Miles.
From Hudson river at Piermont to Goshen, on which the superstructure is mostly laid, - - - -	45
Near Middletown, - - - - - - - - -	2
On the Delaware, between Deposit and Calicoon creek, forty miles put under contract in 1835, and suspended in 1837, about, - - - - - - - -	30
On the Susquehanna, between Owego and Hornellsville,	30
At Dunkirk, - - - - - - - - -	10
	117

Portions now under Contract.

On the Susquehanna Division 117 miles, less 30 graded,	87
Carried forward,	87

Brought forward,		87 117
On the Western Division 134 miles, less 10 graded,	124	
On the Delaware Division, between Deposit and Calicoon creek, 40 miles, less 30 graded,	10	
On the Delaware and Eastern Division, between Calicoon creek and Middletown,	65	
West of the Wallkill, between Goshen and Middletown,	2	
		288

Portions remaining to be put under Contract.

Between Binghamton and Deposit, estimated at	38	
Between Goshen and the Wallkill,	3	
		41
Total length of the road, supposing the shortest line from Binghamton to Deposit to be adopted,		446

II. — OF THE EXPENDITURES AND LIABILITIES OF THE COMPANY.

The amount expended up to the close of 1838, was	$384,219.73
The expenditures in 1839, amounted to	306,989.79
Ditto, in 1840, to	535,906.13
	$1,227,115.65

At the close of 1840, the liabilities of the Company for work done and for materials furnished on the road, and for iron, locomotives, cars, and other requisites, amounted to not less than $500,000, to protect which, further collections on their stock were in progress.

The amount of stock subscribed in the counties on the Susquehanna Division of the road in 1840, including previous subscriptions, which were rendered obligatory by the action of the Company in closing contracts for that Division, is estimated at $350,000 on which more than $80,000 have been collected.	$ 350,000
The amount subscribed, with reference to the contracts on the Western Division, including previous subscriptions, rendered obligatory by these contracts, is estimated at	300,000
The amount subscribed within the same period, with reference to the construction of the road from	
Carried forward,	$ 650,040

Brought forward,	$ 650,000
Middletown to Calicoon creek, and the completion of unfinished sections on the Delaware Division, is estimated at - - - - - - -	400,000
Subscriptions in 1840, by capitalists of the highest respectability in London - - - - - -	75,000
Balances due on subscriptions in the county of Orange, which became obligatory on the contracts being closed in July 1839, for grading the road from the line of Rockland to Goshen, and which were payable as the work advanced, amounting to about - - - - - - - - - -	25,000
Making - - - - - - - -	$1,150,000

independently of the original subscriptions to the capital stock.

III. — OF THE ROUTE, SURVEYS AND RELATIONS OF THE ROAD.

The route is in all respects, most eligible for a work of such extent. Proceeding westwardly, from the harbor of New York, it traverses eleven counties within this State, its course being nearly midway between, and eighty to one hundred and twenty miles distant from the Erie canal, and the canals which extend westward from Philadelphia. The physical character of the country precludes the construction of any rival work within fifty miles or more on either side; while the numerous streams and valleys which are intersected, afford great advantages of access to adjacent districts on the right and left.

The road will therefore, naturally, command the travel and tonnage of a very wide and extended region, comprising twenty-five or thirty thousand square miles, and a numerous population, besides a large proportion of the travel and traffic of the lakes and western States.

The line, moreover, has the advantage on more than three quarters of the whole distance, of being laid in the valleys of rivers, and other considerable streams, as the Ramapo, the Delaware, the Susquehanna, the Chemung, the Canisteo, the Genessee, and the Allegany rivers, and their tributaries, where the grades are extremely favorable, and the soil in the valleys west of the Delaware, adapted to the use of piles.

Excepting the portions previously located, surveys of the entire line of the road have been performed within the past year, including careful and in some instances, very laborious examinations of different routes. It was the object of these surveys to improve the line as far as possible in respect to its length, grades, curvature, adaptation to the use of piles, economy of construction, and susceptibility of further amendment with reference to an additional track; the Directors having had it specially in view to establish the location where it ought to be, on supposition of the road hereafter attaining all the importance as a thoroughfare of trade and travel, which the most sanguine have anticipated for it, and at the same time to secure the construction of a single track with the utmost practicable economy.

The original survey by Judge Wright, which possessed extraordinary merit, and entitled him to the enduring gratitude and respect of the Company, exhibited a line four hundred and eighty-three miles in length; but at the same time indicated the most important points where further examinations would probably result in shortening the distance, and in securing other advantages. Between his survey in 1834, and the close of 1838, re-surveys of the whole line and of different routes on portions of it, costing in the aggregate more than $100,000, resulted in little more than a confirmation of the recommendations and suggestions contained in his Report to the Legislature.

The surveys and examinations of the last year, leave no room to doubt but that the line selected from Piermont to Deposit, one hundred and fifty-seven miles, and from Binghamton to Dunkirk, two hundred and fifty-one miles, is, taking every important consideration, present and prospective, into view, the best that can be obtained. Its length, allowing thirty-eight miles for the distance from Deposit to Binghamton, is four hundred and forty-six miles. It admits of a convenient and advantageous distribution into Divisions, to be worked respectively by locomotives adapted in weight to the ruling grades of the several portions.

Next in importance to the route and location of the road, are its relations to other avenues and sources of travel and business.

Under this head it is obvious, first to notice its relation to the city of New York, the great mart for the products of this and the western States, and of the merchandize to be transported in return, for consumption in the interior; where, from the east and south, the

great lines of travel meet, and where emigrants, and other passengers from Europe, for the most part make their landing in the country. When it is considered that the road extends, by the shortest practicable line, from this city to lake Erie; that it is designed for the transport of heavy tonnage, as well as of passengers; that it will be open for use throughout the year; that the plan of its construction will render it competent to any conceivable amount of business, and that passengers may with safety be transported over it from one extremity to the other, in eighteen or twenty hours; the importance of its connexion with this metropolis, and the value of its local effects here in obviating the disadvantages of a northern climate, and rendering business as active, and supplies as cheap, in the winter as in the summer months, cannot fail to be apparent. (See appendix, *Note A.*)

It has been supposed by some, that the termination of the road on the western shore of the Hudson, about twenty miles from this city, would prove disadvantageous, at least for some five or six weeks of the winter season; and in anticipation of such an objection, provision was made in the charter for extending the line to the city, from a point opposite to the Company's pier. Below that point however, there is seldom, even temporarily, more obstruction from ice than on the ferries opposite to the city. The present winter, owing to the quantity of ice and the occurrence of severe storms, has occasioned difficulties as formidable as are likely to occur hereafter. Nevertheless, the company's boat has regularly performed her daily trips, and by her punctuality and success, has removed all doubt, and established full confidence, of the safety and advantage of this mode of communication with the road.

The pier, which extends about 4000 feet into the Hudson, forms a safe and valuable harbor, in connection with abundant space for all the accommodations of a depot.

Proceeding westwardly, the road passes through the valley of the Ramapo, and a region of the most valuable iron ores, and divides the county of Orange into nearly equal parts. From Goshen, situate near the centre of the county, railways are proposed to Newburgh, distant about twenty miles; to the line of New Jersey, in a southwesterly direction; and to the north, through Kingston, Saugerties, and Catskill to Albany; of which the two former have been chartered. Near the western boundary of Orange, the line approaches the Delaware river, and intersects the Hudson and Del-

aware canal, which extends from the Hudson river, near Kingston, to the Anthracite coal beds of Pennsylvania.

In the county of Delaware, a railroad is proposed from Delhi, or from Walton, to Deposit.

In Broome county, the road intersects the Chenango canal, which extends from the Erie canal at Utica to the Susquehanna river; and also the line of a proposed railway from Utica to the Susquehanna, which has been chartered and surveyed; and another from Binghamton through Cortland and Onondaga counties, to Syracuse, and thence to Lake Ontario at Oswego, which has been chartered, and which, in connection with this road, will offer the most direct and eligible route from this city to Upper Canada.

At Owego, in the county of Tioga, a connection occurs with the Ithaca and Owego railroad, which extends from the Susquehanna to Cayuga lake, by the navigation of which, it forms an important route from the Erie canal. Near Tioga point, a connection is anticipated with the North Branch canal in Pennsylvania.

In the county of Chemung, the road intersects the Chemung canal at Elmira. The same point is contemplated as the termination of a railroad, which is in part constructed, from Williamsport in Pennsylvania, a distance of about seventy-five miles. To perfect a continuous line of railways from Philadelphia to Elmira, and thence, by the road of this Company, to lake Erie, is a principal object of this road.

It is supposed by some, (who of course are not aware how much the grades have been reduced, and the line shortened, on the eastern half of this road, since the original survey,) that on the completion of such continuous line from Philadelphia to Elmira, the distance and amount of rise and fall between these two points, will be less than between Elmira and the eastern termination of this road; and that both trade and travel will therefore be diverted from this route to Philadelphia. An examination of the subject has removed all apprehension of danger from this source. The distance from Elmira to the Hudson at Piermont, supposing the most eligible line from Binghamton to Deposit to be adopted, is two hundred and fifty-two miles, and the aggregate of ascents and descents, 3820 feet. The interval between Piermont and this city is entitled to be regarded only as a ferry.

From Williamsport to Philadelphia, several routes are projected and partly constructed; of which the most direct is that by way of Sunbury, Pottsville and Reading. Of this line, one hundred and fifty-one miles are nearly finished. Its length from Philadelphia to Elmira is two hundred and fifty-eight miles, and its rise and fall 5050 feet. It is moreover encumbered with nine formidable inclined planes, on which stationary power will be required, and is therefore not eligible for general trade or passengers. The next route in point of distance, is that via the Muncy Hills, Catawissa, and Reading, of which the length is two hundred and sixty-five miles, and the rise and fall 5530 feet; of this one hundred and fifty-two miles are completed, or far advanced. The third is a modification of the last mentioned route, and passes from Williamsport to Catawissa, by the valleys of the West and North Branch, instead of crossing the Muncy Hills. It is longer than those above referred to, but has less elevation to encounter, its length being two hundred and eighty-three miles, and its rise and fall 4630 feet; one hundred and fifty-two miles are nearly finished. The only remaining route passes down the Susquehanna to Harrisburg, and thence by way of Lancaster to Philadelphia, of which the length is two hundred and seventy-eight miles, the rise and fall 4790 feet, and the portion finished, one hundred and twenty-six miles.

Each of these different routes is in the hands of four or five distinct companies, and of course subject to the disadvantages incidental to separate interests and diverse modes of superstructure and management. The first is placed out of the pale of comparison by its inclined planes. The second is thirteen miles longer, has 1710 feet more of rise and fall, and cannot, from the arrangement of its grades and curves, be worked so economically. The third is longer by thirty-one miles, and has 810 feet more of rise and fall. The fourth has an excess in length of twenty-six miles, and in rise and fall of 970 feet.

Our road therefore, in view of this brief statement, to say nothing of its uniform character and management, or of the preference due to New York as a market, can be considered in no hazard of a diversion of its business by the lines in question, while as routes both of travel and transport from Philadelphia to lake Erie, and for the conveyance of coal and of iron from the district north of Williamsport, the Pennsylvania works will be largely tributary to the productiveness of the road of this Company.

At Corning, in the county of Steuben, the railway, forty miles in length, from Blossburg in Pennsylvania, occupied chiefly in the transport of bituminous coal, terminates in the line of this road: which also, at the same place, intersects a navigable feeder of the Chemung canal. From Painted Post or Erwin, near the junction of the Canisteo with the Conhocton river, a railroadis proposed to be connected with this, extending up the valley of the Conhocton to the village of Bath, and thence to the Crooked lake.

In the county of Allegany, at Cuba, the line of the road crosses the Genessee Valley canal, which extends from the Erie canal at Rochester, to the Allegany river, a distance of one hundred and seven miles. At Hinsdale, in Cattaraugus county, this road will connect with a Railroad which has been chartered extending along the valley of the Ichua to Buffalo.

The line passing down the Olean creek, in the county of Cattaraugus, approaches the Allegany river, along the northerly side of which it extends about thirty miles. At Olean a connection will be formed with works, to be hereafter constructed, extending thirty miles up the valley of the Allegany to valuable beds of bituminous coal.

From the termination at Dunkirk, on the shore of lake Erie, a railroad has been chartered and surveyed to Buffalo, forty-two miles; and another is proposed in the opposite direction, to be extended along the Southern shore of the lake, into the State of Ohio; from the Eastern border of which State, a continuous line of railroads has been chartered, and portions of it constructed, through Ohio, Indiana, Michigan and Illinois, to the Mississippi, opposite to St. Louis, to be intersected in Illinois, by a route from the city of Cairo, at the junction of the Ohio and Mississippi.

The harbor of Dunkirk is spacious and secure. It is open earlier, and occasionally, some weeks earlier in the spring and later in the autumn than that of Buffalo. (See appendix, *Note B.*)

This brief notice of the relations of this work to those natural and artificial avenues which intersect its route, and are already open, or are confidently anticipated, may serve in some degree to indicate its probable command of business, and its high claims to the confidence of its proprietors and of the public.

An examination of a map of this and the adjoining States, will how that most of the routes of travel and transport above noticed, are intersected nearly at right angles, which sufficiently characterises them as tributaries instead of rivals. Their aggregate length is far greater than that of the main avenue. Those extending to the right will supply for distribution in the Southern, the salt, lime, gypsum, and various manufactures and products of the

Northern counties of this State; while those approaching from the South and West, will furnish for transport from numerous points, anthracite and bituminous coal, iron, and the products of agriculture and of the forest.

IV. — OF THE COST OF THE WORK.

The former estimates, as revised in 1835 and 1836, of the cost of constructing the work with a light superstructure and common plate rail, amounted to $6,000,000. In these estimates, however, land damages, depot buildings, water stations, and some other items, were omitted. Were the road, after being prepared under the contracts which have been made for grading and piling, to be finished with a superstructure like that formerly proposed, the cost would not exceed the amount above represented.

In the estimates above referred to, the cost of grading and preparing the road for the superstructure, amounted to $3,900,075. Under the contracts which have been made, and to the extent of about one-third executed, and which cover the entire line, except the section between Binghamton and Deposit, about thirty-eight or forty miles, with an estimate supposed to be liberal for that section, the cost of grading, piling, bridging, masonry, etc., to prepare the road for the superstructure, will amount to $3,840,000. The character of the work, however, which has been, and is to be, executed under these contracts, is deemed to be in some respects much superior to that contemplated in the original estimates, so as to adapt it, with an edge rail, to the use of locomotives of double the weight formerly intended, and to the conveyance of proportionately heavier loads. The masonry is accordingly more solid and permanent; the bridges are stronger, and in some instances, the grades are improved, and the line shortened, at considerable additional expense.

The adoption of piles in the construction of nearly two hundred miles of the road-way, is likewise deemed a great advantage over the ordinary method of grading. The piles used are generally of white oak, about twelve inches in diameter. They are driven by steam power, five feet apart from center to center, to such depth in all cases as to secure them from the effects of frost, and with such force as to leave them in no danger of settling under the pressure of any load. The tops of the piles being protected by timbers wide enough to cover them, it is supposed that they may endure about twelve or fifteen years. They form a road of uniformly even surface throughout the year, which is not liable to be obstructed by

snow, and while they continue sound, will be subject to little or no expense for repairs. The difference between a piled and graded road for annual repairs will, it is believed, be sufficient in five or six years to defray the entire cost of renewing the piles; while the expense of working such a road, owing to the constant evenness and good condition of the rails, will be very considerably less than is commonly incurred on graded roads. (See appendix, *Note C.*)

But though the preparation of the road-bed is not expected to cost more than was formerly contemplated, a very important change has been made in the plan and character of the superstructure, which will materially enhance its expense. The Directors being, after due investigation, satisfied that the ordinary plate rail and light timber formerly proposed, would be inadequate to the objects and business of this road, and in every point of view inexpedient, adopted an edge rail, of the most approved form, weighing fifty-six pounds per lineal yard, which, with the requisite chairs and spikes, will cost, delivered and distributed on the road, about $6800 per mile of single track. This rail, instead of being supported only on cross ties, laid at intervals of three to five feet, as is the case on other roads, is to be laid on heavy longitudinal sills, connected by cross-ties framed into the upper surface. These sills, by giving to the iron a continuous bearing, contribute greatly to the strength and safety of the track.

The cost of this superstructure, including all materials excepting iron, with the labor of framing and laying it down, and laying the rails, will be about $1900 per mile, making the entire cost of the rails, chairs, spikes, timber and workmanship, $8700 per mile.

Supposing the length of single track required in the first instance, with the necessary side tracks and turns-out, to be five hundred miles, the cost of iron alone, will, on the plan adopted, be $3,400,000; and of timber, workmanship, etc., $950,000, making $4,350,000, which is 74 per cent. more than was formerly allowed for the entire cost of the superstructure.

For the satisfaction of those who are not aware of the considerations which justify so enlarged an expenditure, it may be useful to refer to the experience of others on this subject.

The heaviest wrought iron rails in use in England, prior to the construction of the Liverpool and Manchester railway, were those on the Stockton and Darlington road, which weighed but twenty-eight pounds to the yard; and proved to be much too light for

general traffic, and unsafe for rapid travel. Rails, therefore, weighing thirty-five pounds to the yard, were adopted; but these also proving insufficient, were removed and others of sixty-four pounds were substituted, which still remain in use.

Profiting by the experience of the last mentioned Company, the Directors of the Liverpool and Manchester road adopted in the first instance a rail of thirty-five pounds, then the heaviest which had been used in England. A single year proved its insufficiency, and it was speedily followed by one of forty-four pounds, which again gave place to a different pattern, weighing fifty pounds per yard. A very few of the latter remain at present on the road, those now in use being chiefly of four different patterns, weighing respectively sixty, sixty-two, seventy, and seventy-five pounds per yard. Experience thus induced improvements in the construction, and an increase in the weight and cost of rails, until the vast strength of the forms of section now most approved, was attained.

	Per Yard.
The rails laid on the Midland Counties road, weighed	78 lbs.
Those laid on the Eastern Counties road,	76 lbs.
Those on the London and Birmingham, the London and Southampton, and London and Brighton roads,	75 lbs.
Those on the North Eastern Counties road,	69 lbs.
Those on the North Midland, and the Manchester and Birmingham roads,	65 lbs.
Those on the Great North of England road,	62 lbs.
Those on the Great Western, now in progress,	56 lbs.

Of these, one only, is as light as that adopted for this road; and in that instance, as in ours, the rail has a continuous bearing on a longitudinal sill; while all the others are supported on chairs, at intervals of three to five feet, weighing from twenty to over thirty lbs. each.

In this country, likewise, the results of experience abundantly show, that wherever it is an object to construct a railway, it is to the last degree desirable to obtain a heavy rail. On several roads where a light bar was originally laid, it has been replaced by one better adapted safely to permit rapid travelling, to sustain the severe shocks incident to a heavy trade, and to admit of constant and economical use; of such, the Columbia, Newcastle and Frenchtown, Baltimore and Ohio, and others, might be referred to as instances.

The following statement of the cost of superstructure, with heavy

rails on several roads, is extracted from a pamphlet published by B. H. Latrobe. The author does not give the actual cost in the several instances, but the calculated cost of the different plans of superstructure, at a tariff of prices, which he deems a fair average for this country.

"Baltimore and Susquehanna,	$11,556	per mile.
Stonington and Providence,	11,149	"
New Jersey,	10,700	"
Boston and Worcester,	10,637	"
Long Island,	10,587	"
Baltimore and Ohio,	10,354	"
Boston and Providence,	10,352	"
Washington Branch,	9,519	"
Philadelphia and Reading,	9,451	"
Baltimore and Deposit,	9,428	"
Camden and Amboy,	9,114	"
Wilmington and Susquehanna,	8,752	"
Newcastle and Frenchtown,	8,736	"
Average of the above,	$10,026"	"
New York and Erie,	8,700	"

It was believed that with a plate rail, the road would be wholly inadequate to the travel and transport which it ought, and, if properly constructed, assuredly would command; that it would be unsafe for passengers, would be subject to enormous expense for repairs, and could not be economically used for the conveyance of tonnage; whereas, with a heavy rail, it would be competent to all its objects, could be worked with economy, would require but a moderate expense for repairs, and would be so much more productive and valuable, as to justify the confidence necessary to render it easier to accomplish its construction on the plan of an enlarged expenditure, than to carry out that originally proposed.

The cost of land and damages will be unusually small, probably not exceeding an average of $500 per mile; about three-fourths of the whole line, and suitable sites for depots being released without charge, and further gratuitous cessions being anticipated. Other donations of land having been made of the value, probably, of $1,000,000, and certainly more than sufficient to cover the cost of land for the roadway, this item is not brought into view in the following estimate of the cost of the work, viz:

For preparing the roadway for the superstructure, which includes grading, piling, masonry, bridging, fencing, and superintendence,	$3,840,000
For iron rails and appendages delivered and distributed,	3,400,000
For timber and workmanship for superstructure,	950,000
For locomotives and cars sufficient for the first operations on the road,	400,000
For passenger and freight depots, machine shops, water stations, engine houses, and other necessary buildings,	200,000
For interest and contingencies,	210,000
	$9,000,000

In view of this estimate, which is so far founded on actual contracts, experience, and ascertained facts, as to be deemed worthy of confidence, it is apparent that further resources of capital than are yet at the disposal of the Company, will be required. The Directors rely on the stock of the Company, after large allowance for the disastrous consequences, to many of the original subscribers, of the conflagration in this city in December 1835, and the commercial revulsion of the ensuing years, for at least $3,000,000. The loan of the State heretofore granted, is of the like amount; and they trust that the progress, condition, and promise of the undertaking, will be such, before the close of the present year, as to leave no doubt of the expediency, safety, and public utility, of such further aid from the State, as the speedy completion of the work shall require.

The contracts for grading and preparing the roadway, including the superstructure of wood, on about two hundred and forty miles, require the execution of those parts of the work within two years; the payments for which, will be discharged by collections on the stock of the Company, and the proceeds of State stock yet to be received under the existing law. The further needful resources will be required for the purchase of iron. On the plan of preparing the roadway within two years, or thereabouts, it is highly desirable that the Company should be enabled to contract for the iron rails, of which about 35,000 tons are yet wanted, and for locomotives and cars, in the course of the present year, on account of the length of time required for their manufacture, and delivery on the line of the road. The importance of the entire line being put in use, and rendered productive within the shortest possible period, after the road-bed is prepared, is apparent.

(NOTE A.)

To E. Lord, Esq., President of the New York and Erie Rail Road Company :—

Sir—The subjoined statistical tables, having a bearing on matter connected with the great work of internal improvements in which you are engaged, I have prepared with much care, and respectfully submit the same for the consideration of the stockholders of your Company, and the public. Your obedient servant,

EDWIN WILLIAMS,
Compiler of the New York Annual Register.

New York, February 3d, 1841.

1—*Annual consumption of country produce in the city of New York.*

The following is an approximate estimate of the annual amount of sales of articles of country produce in the city of New York for the consumption of the inhabitants.

Fresh Beef,	$1,470,000
" Veal,	365,700
" Mutton and Lamb,	335,000
" Pork,	600,000
" Poultry, Game, Eggs, &c.,	1,000,000
Salted Beef, Pork and Hams,	1,200,000
Vegetables and fruit,	1,200,000
Milk,	1,000,000
Butter Cheese and Lard,	1,500,000
Flour, Meal and other Bread Stuffs,	3,000,000
Hay and Oats,	750,000
Fuel, (Wood & Coal) exclusive of Steamboat Fuel,	2,500,000
Articles not enumerated,	580,000
	$15,500,000

The above is not intended to include building materials.

The opening of a new avenue for supplying our markets, such as the New York and Erie Rail Road, which passes through a section of country well adapted to the furnishing of most of the above articles, would doubtless have the effect of reducing prices by increasing the abundance of supplies. This reduction may be safely estimated to average ten per cent. on the above amount, thus saving annually to the inhabitants of this city, a million and a half of dollars.

2—*Increase of population, &c., in the Rail Road Counties.*

Increase of population and wealth in the counties traversed by the New York and Erie Rail Road, and of adjacent counties and parts of counties in this State, as shown by the census of 1830 and 1840, and the taxed valuation of real and personal estate in the same years :—

Counties traversed.	*Census.* 1830.	*Census.* 1840.	*Value of real and personal estate.* 1830.	1840.
Rockland,	9,388	11,874	$1,696,790	$2,229,469
3-4 of Orange,	34,029	38,050	6,325,777	8,656,670
Sullivan,	12,372	15,630	1,215,750	1,819,586
3-4 of Delaware,	24,700	26,522	2,315,555	2,544,060
Broome,	17,582	22,348	1,785,168	2,361,737
Tioga,	27,704	20,350	2,398,002	1,906,747
Chemung,		20,731		3,015,592
Steuben,	33,975	45,992	1,476,340	5,787,282
Allegany,	26,218	40,920	1,260,442	5,216,000
Cattaraugus,	16,726	28,803	1,249,018	4,149,073
Chautauque,	34,657	47,641	1,851,353	4,360,179
Counties Adjacent.				
2-3 of Oswego,	34,248	32,942	3,588,730	3,879,397
Chenango,	37,404	40,779	3,481,314	4,293,438
Cortland,	23,693	24,605	2,169,119	2,320,720
Tompkins	36,545	38,113	2,726,596	4,360,673
1-3 of Cayuga,	15,982	16,787	1,384,711	4,170,885
1-3 of Seneca,	7,010	8,289	1,008,043	1,726,318
1-2 of Yates,	9,504	10,221	1,020,348	3,231,091
1-4 of Ontario,	10,042	10,875	1,945,088	3,464,312
1-2 of Livingston,	13,859	17,855	1,712,366	5,072,979
1-2 of Gennesee,	25,996	29,820	2,149,297	6,462,772
1-4 of Erie	8,928	15,538	724,781	3,471,378
	460,562	564,685	$43,484,588	$84,000,358
		460,562		43,484,588
Increase in 10 years,		104,123		$40,515,770

3—TABLES SHOWING THE EFFECT OF INTERNAL IMPROVEMENTS ON THE VALUE OF PROPERTY IN THE CITY OF NEW YORK.

1—*Chronological Table of the Assessed Value of Real and Personal Estate in the city of New York, during three Commercial Periods:*

1st *Period*—From the close of the last war with Great Britain to the completion of the Erie Canal:

Year.	*Assessed Valuation.*	*Year.*	*Assessed Valuation.*
1815,	$81,636,042	1820,	$69,539,753
1816,	82,074,200	1821,	68,285,070
1817,	78,895,735	1822,	71,289,144
1818,	80,245,091	1823,	70,940,820
1819,	79,113,061	1824,	83,075,676

2d *Period*—From the opening of the Erie Canal, in 1825, to the completion of the Ohio Canal:

1825,	$101,160,046	1829,	$112,526,016
1826,	107,477,781	1830,	125,288,518
1827,	112,211,926	1831,	139,280,214
1828,	114,019,533	1832,	146,302,618

3d *Period*—From the completion of the Ohio Canal, in 1832, to the present time:

1833,	$166,495,187	1837,	$263,747,350
1834,	186,548,511	1838,	264,152,941
1835,	218,723,703	1839,	266,882,430
1836,	309,500,920	1840,	252,135,515

N. B. During the latter period, namely, since 1832, about 470 miles of Rail Road have been completed and put in operation in this State, besides about 2,500 miles of Rail Roads in other States. Thus it will appear that since the introduction of the *Rail Road System*, the value of real and personal property in the city of New York has increased over *one hundred millions of dollars.*

The amount of tonnage of Canal boats passing and repassing Utica, on the Erie Canal, for one year, it is ascertained, is greater than that of all the foreign and domestic shipping entering and clearing at the port of New York. *(See R. R. J. Vol. 4, No. 1.)*

2—*Chronological Table of the Assessed Value of Real Estate only, in the city of New York, for a series of years:*

Year.	*Real Estate.*
1817,	$57,799,435
1820,	52,062,858
1823,	50,184,229
1825,	58,425,395
1828,	77,139,880
1831,	95,716,485
1833,	114,124,566
1834,	123,249,280
1836,	233,742,303
1839,	196,940,134
1840,	187,121,714

Increase of value of real estate in this city, since 1831, over 91 millions of dollars.

Assessed value of personal estate in 1840,	$65,013,801
" " " 1833,	52,366,976
Increase,	$12,646,825

Extract from a report to the stockholders of the Camden and Amboy Railroad Company, dated January 29th, 1840:—

"Two years since, at the request of some market people in New Jersey, a line called the Pea Line, with two cars, was occasionally started from Camden to New York, with no other view or expectation than the accommodation of a very useful and respectable class of men. This line has steadily increased, until it has become profitable beyond all expectation. During the past year, it has been running daily, sometimes taking with it as many as sixteen cars, laden at the appropriate season with Peas, Peaches, Potatoes, Asparagus, Cabbages, Live Stock; and upon one occasion, (incredible as it may seem) thirty tons of Green Corn. This, connected with the gradual increase on the other lines, will enable you to judge what you may fairly expect in a few years hence; always bearing in mind, that the expenses do not increase in the same ratio with the receipts, because the same capital can do a larger business, whilst the interest to be paid remains the same."

(NOTE B.)

DUNKIRK HARBOR.

Extract from the documents accompanying the President's Message to Congress, of December, 1837.

"The importance of the harbor of Dunkirk, in a commercial point of view, has heretofore been fully set forth. The surface enclosed by the government works, will be about two hundred and eighty acres, of which there are eighty acres of excellent anchorage, with clay bottom; and there is wharf room sufficient for the transaction of a very large business. It occupies a position nearly midway between Buffalo and Erie. It is extremely valuable as a port of refuge, and has been much resorted to for that purpose by steamboats and sail vessels; and it has been selected for the termination of the New York and Erie Railroad through the southern tier of counties of the State of New York; a work, the completion of which will at once place it among the chief harbors on the shores of lake Erie. The number of steamboats and sail vessels touching at this port has, during the past season, greatly increased. From the opening of the navigation, on the 5th May, to the 30th September, 1837, the number of arrivals of steamboats was 630, whose probable tonnage amounted to 183,177 tons, and the number of passengers to 78,700. During the same period, the number of arrivals of sloops and schooners was 103. Shipping to the amount of 778 tons is owned at the port."

The above is taken from the annual report of T. S. Brown, *General Superintendent of the U. S. works at the east end of lake Erie.*

The distance from Dunkirk to Piermont, on the Hudson river, by the line of the New York and Erie Railroad, is 446 miles. Including the *ferry*, the whole distance to New York city does not exceed 468 miles.

From Buffalo, by the way of Albany, to New York, the distance by railroad will be about the same, viz :—

Buffalo and Batavia Railroad, (via. Attica,)	39	miles.
Batavia and Rochester " - - -	32	"
Rochester and Auburn " - - -	78	"
Auburn and Syracuse " - - -	26	"
Syracuse and Utica " - - -	54	"
Utica and Schenectady " - - -	78	"
Schenectady and Albany " - - -	16	"
Albany and New York " - - -	149	"
Total, - - -	472	miles.

Dunkirk is 42 miles west of Buffalo, on the south shore of lake Erie, and its harbor is occasionally open many days, and even weeks, earlier in the spring and later in the fall.

The line of the New York and Erie Railroad being entirely in the hands of one Company, the principle of charging less per mile in proportion as the distance travelled is greater, may be brought into action, and will, doubtless, result in great advantage both to the public and to the Company. Passengers from Dunkirk to New York city, for instance, may be charged 12 dollars, which will be about $2\frac{1}{2}$ cents per mile; whereas, way passengers travelling 100 miles or less, may be charged 4 cents per mile. As the superstructure will be heavy and substantial, passengers by quick trains may with certainty and safety go from Dunkirk to New York in from 20 to 24 hours, or at the average speed of 20 miles an hour, including stops.

If we compare this with the state of things at present existing on the northern line, and which will probably continue for a considerable time to come, we shall see that there, in consequence of there being eight different corporations, each of which, until compelled by some strong inducement to the contrary, will charge the full rate of 4 cents per mile, the price of the passage from Buffalo to New York will be from 17 to 19 dollars,—the former sum allowing for a deduction by the competition of the North river steamboats. As the track on the northern line consists of the light plate bar, the speed cnanot exceed 15 miles per hour; and the time occupied, including the unavoidable detentions resulting from so many different proprietorships, the ferry at Albany, etc., cannot be less than 36 hours. The New York and Erie Railroad, therefore, at the first commencement of its operations, may very well be able to offer to passengers from lake Erie and the western States, the inducement of a saving of five dollars in expense, and twelve hours in time.

(NOTE C.)

Description of the manner in which it is proposed to construct the track of the New York and Erie Railroad, on those portions not already laid. The part between Goshen and Piermont has been made on the same principles, with some modification of the details.

THE IRON RAILS are of the H form, with heavy heads. They

are $3\frac{1}{2}$ inches high, 4 inches wide on the base, and weigh 56 lbs. per lineal yard. Both sides are alike, in order to admit of reversion, if symptoms of failure are perceived in those parts exposed to the action of the wheels.

The rails are to be supported on continuous bearings of timber, twelve inches broad eight inches thick, and as long as can be conveniently obtained. They must be scraphed at the ends, so that no irregular elevation or depression of either stick can take place at a joint. They will break joints with each other, and with the iron rails; and will be bound together, at every six feet on curves, and at every eight feet on tangents, by cross ties of plank, seven and a half feet long, three inches thick, and seven inches wide, fitted accurately into notches two and a half inches deep, on the upper side of the longitudinal timbers, and secured by a treenail, or pin of oak, two inches in diameter. The position of the base of the rail having been then accurately marked out on the cross ties, notches half an inch deep and four inches wide will be cut in them, so as to let the rail rest continuously on the longitudinal timbers, the edges of which must be addiced down to shed the rain.

The rails are secured from any motion, except that due to the expansion and contraction of the metal, by appropriate chairs of cast iron at the joints; and are fastened to the timbers by brad headed spikes, half an inch square and five and a half inches long, one of which is required for every eighteen inches.

Where timber of suitable quality is found on the line of the road, it may be hewn on two sides instead of being sawed square. In such cases it must be got out nine inches thick, and counter hewn on the upper surface before being laid.

It will be noticed that by this plan of road, each bearing timber rests continuously on the ground, and at the same time supports continuously the iron rail. The cross ties too, have a double action; binding together the longitudinal bearers, and also connecting the rails, by the notches into which their bases are fitted. By placing the ties on the upper side of the bearers instead of the lower, the connexion is made at the point where its efficiency is greatest and most necessary, and as no part of the vertical support is derived from the ties, the dimensions proposed for them will be found sufficient.

The drainage of the track will be effected by a ditch between the longitudinal timbers, for which the width between the rails affords ample room; and cross drains at suitable distances will carry off the water. The centre drain, will be sunk lower than the cross ties, so as not to interfere with them.

The following extract from an English writer, Mr. John Reynolds, explains very satisfactorily the disadvantages of the ordinary modes of constructing railways, and accounts in some measure for the great weight which the latest patrerns of British rails exhibit.

"The principle of continuous bearings, avoids the chief obstacle to durability, which pertains to the plan of supports at intervals,

whether they be blocks or sleepers, viz. the alternation of *flexible spaces* and *rigid points*, which, (even if the supports maintain an exact level,) produces in carriages moving rapidly over them, a series of concussions, as the wheels successively impinge on the rigid or supported parts of the rails. Also, however small may be the deflexion of the rail between its points of support, those points become fulcra, on which it acts as a lever, to raise or shake the supports next beyond them. When the supports assume irregular heights, (which is the usual case,) not only are the above evils greatly aggravated, but the rail acts upon every support as a spring beam, tending to jerk it up, or loosen its fastenings."

Where a *piled road* is adopted, (which will be the case on more than two hundred miles of the Susquehanna and Western Divisions,) a similar superstructure is proposed, with the necessary modifications for connecting it firmly and securely to the heads of the piles.

The *width of track* on the New York and Erie Railroad is six feet, and the distance between the tracks (where two lines are laid,) is seven feet. These dimensions admit of wider and more commodious cars being used with safety, than can be adopted for roads of the ordinary width. The first class passenger cars already built for this road, are believed to be equal to any hitherto constructed in the United States, with regard to beauty and finish, and superior in all the arrangements and appliances requisite for comfort and ease. They are eleven feet wide, and thirty-six feet long, and are mounted on eight wheels. Those intended for gentlemen, will accommodate comfortably seventy-eight persons. The ladies' cars have drawing and retiring rooms of ample dimensions.

The second class cars, intended for the use of emigrants, and others desirous of travelling at a low rate, and willing to accept of cheaper accommodations, will be capable of carrying one hundred persons.

(To be continued.)

NEW LOCOMOTIVE.—Mr. Ross Winans of Baltimore, has completed a locomotive engine of great power. The engine has been constructed with a veiw to adapting it to the purpose of transportation. Its weight, when in running condition, is nineteen and a third tons, equally distributed on eight wheels, all which are driving or propelling wheels; hence the adhession of the entire weight of the machine is made subservient to its tractive power. The boiler, of the upright description with vertical tubes, is peculiarly adapted to the use of coal, has 650 tubes and 20 square feet of fire grate. The cylinders are 14 inches in diameter and 24 inch sroke.

FRANKLIN RAILROAD.—The Hagerstown Torchlight states that the section of the above road between the Pennsylvania State Line and Hagerstown is completed, and the cars commenced running upon it on Wednesday. The occasion was duly celebrated by the citizens of Chambersburg and Hagerstown.—*Baltimore American.*

QUICKER YET.—The new Locomotive, "Owasco," with one passenger car, went from Auburn and Syracuse on Thursday last, distance 26 miles, in 52 minutes. This is the quickest trip ever made on the road. The engine was built by Messrs. Dennis, Thomas and Wood of this place, and is superior as a peice of perfect mechanism to any thing we ever have seen.